

Charging station for e-vehicle utilizing sunlight based with IoT

¹Hemanth Kumar A M, ²Dr. Thippeswamy K.

¹Student, ²Professor
Computer Science & Engineering,
VTU PG Center, Mysuru, India

Abstract: Charging E-vehicle module using the sunlight based board, availability of most extraordinary power is seen by IOT device and the best power created by the sun arranged is being followed. The whole framework is associated with Arduino UNO, the phase of the batteries, made and appropriates a proportion of the battery is seen using a LCD. Here we can charge various vehicles using daylight based cell. GSM modem is used to give an alarm caution to any diminish of power occurred in the structure. The page is utilized to test the usefulness condition of the charge, the computation of the weight moved to the charging board and the usable locale for the charging station can be seen.

Index Terms: E-vehicle, Arduino UNO, computation, charging station

I. INTRODUCTION

The interest for regular vitality like coal, gaseous petrol, and oil is raised, with the objective that the scientists constrained towards the improvement of sustainable assets or non-customary vitality assets. Over the most recent few years, a ton of conversation around the costs of fuel separated from the deregulation of petroleum and non-renewable energy source costs. In addition, these dangers of disturbance of provisions have welcomed the emphasis on to exchange drive train innovations. In the 1800s, the first engine was on the track. Though Robert Anderson, the British innovator, is unveiling the first unrefined electric vehicle. Potential for elective developments in transportation, e.g. hybrid automobiles, first successfully defined by William Morrison, a scientist in the US. His six-wheel hybrid truck is fitted with a maximum speed of 14 miles an hour higher than the conventional pay car. More and more sun-powered electric vehicles will arrive in the coming year due to the following reasons: The outflow of petroleum products for extracting resources from renewable assets intelligent compliance with electronic specifications that promote observation. Accessibility of the energy utilized by IOT and control of the sun's radiation over a span of time. Electric vehicle restricts the traveler's point of view to a car that derives its flow from lithium-powered lithium. There are three types of electric car: crossover electric vehicle, hybrid platform (PHEV), electric vehicle battery (BEV) and extended electric vehicle (EREV). The main objective of the paper is to provide power from the sun-oriented PV cell to the charging station where the vehicle can be charged with the solar-powered solar and, however, with the aid of IOT, the accessibility the state of the charging station can be tested every now and again at any point in time.

II. DESCRIPTION OF PROPOSED SYSTEM COMPONENTS

These non-sustainable petroleum products have the additional drawback of discharging huge amounts of unsafe figure dioxide, nitrogen oxides, and particularly carbon dioxide into the earth while copying. Every one of these mixes are straightforwardly prosecuted in the dangerous a dangerous atmospheric deviation wonder. These emanation issues are the main inspiration for the expanding regard for the charge of versatility.

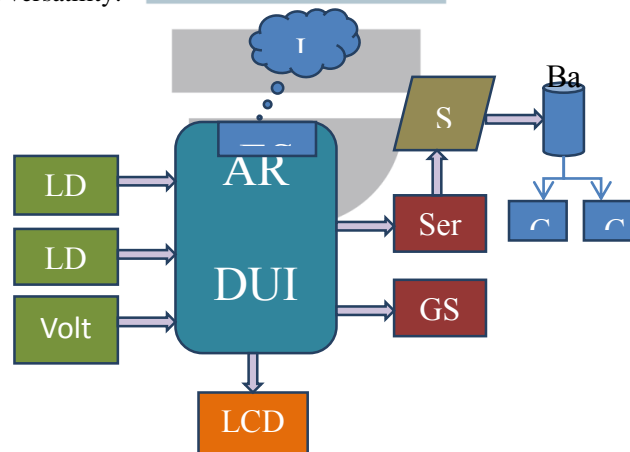


Fig 1: System Architecture

A. ARDUINO:

It has fourteen optical input / output connectors, six analog inputs. It is an open-source forum for the development of online ventures. Circuit board and a piece of both a digital electronic circuit board (often called a microcontroller) as well as a piece of technology, or IDE (Integrated Program Environment) running on the unit, used to write and pass programming code to the actual board.



Fig 2: Arduino

B. LCD DISPLAY:

What is LCD Liquid Crystal display is the utilized for shows the information. Lcd is polarizing channel film with flat and vertical hub to square or pass the light, reflective surface to send light back to watcher. Lcd show made out of pixel comprised of Liquid precious stone.

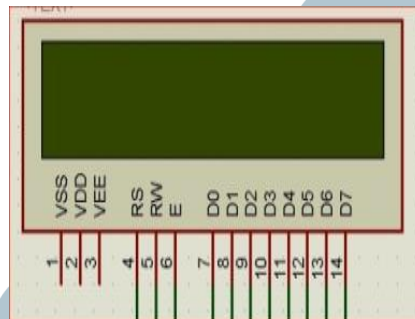


Fig 3: LCD Display

C. GSM:

GSM / GPRS Modem-RS232 operates with SIM900A Dual Band GSM / GPRS generator, chips at 900 to 1800MHz frequencies. The modem is followed by the RS232 module, which helps you to connect PC with RS232 Chip(MAX232) much like a microcontroller. The baud rate is configurable to allow you to link through GPRS to the internet. It's best in M2 M gui for SMS, Speech even like DATA moves device.



Fig 4: GSM

D. LDR SENSOR:



Fig 5: LDR Sensor

A Light Dependent Resistor (LDR) is often referred to as a camera resistor or a cadmium sulfide wire. It's sometimes named a photoconductor. It's basically a photocell that chips away from the law of photoconductivity. The latent component is basically a resistor whose sense of interference decreases as the intensity of light decreases. In the most part, this optoelectronic device is used

in two-different sensor circuits and bright and dull switching circuits. Many of its uses include video light meters, road lamps, clock radios, light shaft alarms, smart smoke notifications, and outdoor tickers.

E. VOLTAGE SENSOR:

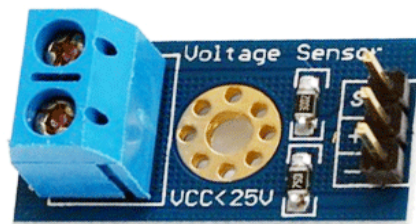


Fig 6: Voltage Sensor

Sensors are fundamentally a gadget which can detect or distinguish and respond to particular sorts of electrical or some optical signs. Usage of voltage sensor and current sensor strategies has gotten a brilliant decision to the regular current and voltage estimation techniques.

F. SOLAR CELL:



Fig 7: Solar Cell

Solar cell, often named photovoltaic cell, any gadget that genuinely switches from the vitality of light to electrical vitality by photovoltaic effect. The lion's share of sunlight-based cells is made from silicon — with the productivity and decreasing costs as materials range from indistinct (non-crystal) to polycrystalline to crystalline (single precious stone) silicone structures.

G. SERVO MOTOR:



Fig 8: Servo Motor

An electronic machine is a servo motor that can drive or transform an item with incredible precision. At that point, you use an off-chance servo engine that you need to rotate and an article at some specific point or separation. It's just a simple engine that passes through the part of the servo. When the engine is used, it is powered by DC, it is called the DC servo engine at that point, and the AC servo engine at that point is called the AC servo engine at that point.

III. PROPOSED SYSTEM

These non-sustainable petroleum products have the additional drawback of discharging huge amounts of unsafe figure dioxide, nitrogen oxides, and particularly carbon dioxide into the earth while copying. Every one of these mixes are straightforwardly

prosecuted in the dangerous a dangerous atmospheric deviation wonder. These emanation issues are the main inspiration for the expanding regard for the charge of versatility.

ADVANTAGES

Breaking down voltages inevitably and transferring on iot for observing and we can make a move if voltage isn't appropriate.

IV. METHODOLOGY

As sunlight based PV cluster assumes an essential job in an undertaking, the model with the LDR sensor to track the power generation situation from the source, which helps to maintain a continuous progression of vitality. Also, will charge the sun oriented cell and spare charging in battery after that we can utilize charging for vehicles.

The whole yield from the cell and it should fair-minded yield when it surpasses the normal outcome so as to maintain a strategic distance from a hysteresis misfortune. At first, DC-DC converter considers DC input voltage and often supplies DC output at the next stage, whether lower or higher relies upon the prerequisite with the end goal that converter yield voltage coordinates the force flexibly required to the module.

Voltage sensor will check the voltages of originating from the battery. In the event that voltages are out of range, at that point send the message utilizing GSM module. What's more, we will print on LCD show and transferring information on cloud utilizing thing talk.

V. CONCLUSION

Battery sensor focused on the Internet of Things (IoT) shows the constant position of the battery as a resilience in the executive system. The IoT produced here uses the cloud stage for executive purposes. Without much of a stretch test, the vehicle client will arrive at the charging station and see the removal of the battery voltage from the container. The information contained in the Arduino will last until the battery ceases to charge. For potential use, a significant amount of customers for the e-vehicle setting up the station should be deleted and revamped in the database to insure that the conveyance to the distinctive company will be detected.

REFERENCES

- [1] Dr. Thippeswamy K, Hemanth Kumar A M, "Charging Electric Vehicles using Solar Energy with different Techniques" International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653 Volume 8 Issue V May 2020.
- [2] Gheorghe Badea, Raluca-Andreea Felseghi, Mihai Varlam "Design and Simulation of Romanian Solar Energy Charging Station for Electric Vehicles", 2019 Energies,12,74.
- [3] Nusrat Chowdhury, Chowdhury Akram Hossain, Michela Longo and Wahiba Yaici: "Optimization of Solar Energy System for the Electric Vehicle", Energies 2018,11,2433;doi:103390/en11092433.
- [4] Erik Blasius, Erik Federau, Zbigniew Leonowicz, Przemyslaw Janik: "Assessment of e-vehicles availability in charging pool for support services in Smart Grids" 2017 IEEE.
- [5] Arun kumar P, Vijeth K: "IOT Enabled smart charging stations for Electric Vehicle", 2018,247-252 International Journal of Pure and Applied Mathematics.
- [6] D. Della Giustina and S. Rinaldi, "Hybrid Communication Network for the Smart Grid: Validation of a Field Test Experience," IEEE Transactions on Power Delivery, vol. 30, no. 6, pp. 2492–2500, 2015.
- [7] S. Rinaldi, D. Della Giustina, P. Ferrari, A. Flammini, and E. Sisinni, "Time synchronization over heterogeneous network for smart grid application: Design and characterization of a real case," Ad Hoc Networks, vol. 50, pp. 41–57, 2016.
- [8] [8] European Union, „Directive 2012/27/EU Energy Efficiency, 2012.
- [9] M. A. S. Masoum, P. S. Moses and S. Hajforoosh, "Distribution transformer stress in smart grid with coordinated charging of Plug-In Electric Vehicles," 2012 IEEE PES Innovative Smart Grid Technologies (ISGT), Washington, DC, 2012, pp. 1-8.
- [10] Garcia-Olivarias, A;Sole, J.; Osychenko, O. Transportation in a 100% renewable energy system. Energy Convers. Manag. 2018,158,266-285[Crossref]
- [11] Friansa, Koko, Irsyad Nashirul Haq, Bening Maria Santi, Deddy Kurniadi, Edi Leksono, andbrian Yulianto, "Development of Battery Monitoring System in Smart Microgrid Based on Internet of Things(IoT)." Procedia engineering 170(2017):482-487.